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EXAMINER

HANNAHER, CONSTANTINE

ART UNIT	PAPER NUMBER
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2884

DATE MAILED: 02/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/820,039

Applicant(s)

CLARKE ET AL.

Examiner

Constantine Hannaher

Art Unit

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20040813.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. As set forth in MPEP § 609:

37 CFR 1.98(b) requires that each item of information in an IDS be identified properly. U.S. patents must be identified by the inventor, patent number, and issue date. U.S. patent application publications must be identified by the applicant, patent application publication number, and publication date. U.S. applications must be identified by the inventor, the eight digit application number (the two digit series code and the six digit serial number), and the filing date. If a U.S. application being listed in an IDS has been issued as a patent, the applicant should list the patent in the IDS instead of the application. Each foreign patent or published foreign patent application must be identified by the country or patent office which issued the patent or published the application, an appropriate document number, and the publication date indicated on the patent or published application. Each publication must be identified by publisher, author (if any), title, relevant pages of the publication, date and place of publication. The date of publication supplied must include at least the month and year of publication, except that the year of publication (without the month) will be accepted if the applicant points out in the information disclosure statement that the year of publication is sufficiently earlier than the effective U.S. filing date and any foreign priority date so that the particular month of publication is not in issue. The place of publication refers to the name of the journal, magazine, or other publication in which the information being submitted was published.

2. The errors in the information disclosure statement cannot be considered a matter of inadvertence in view of the presence of the INID codes on the document(s), see MPEP § 901.05(b).

Drawings

3. The drawings were received on May 18, 2004. These drawings are acceptable.

Specification

4. Section 608.01 of the MPEP states in part:

In order to minimize the necessity in the future for converting dimensions... to the metric system of measurements when using printed patents... all patent applicants should use the metric (S.I.) units followed by the equivalent English units when describing their inventions....

The Assistant Secretary and Commissioner of Patents and Trademark strongly reiterated and emphasized strong encouragement for patent applicants to use the metric system in patent

applications in a message appearing at 1135 O.G. 55 dated February 18, 1992. At some future time, the USPTO will consider making it a requirement.

Note the use of the inch. The Examiner is unable to require the use of SI units.

5. The disclosure is objected to because of the following informalities: paragraph [0025], "whit Delrin®" where --white Delrin®-- is meant.

Appropriate correction is required.

6. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: specifying the direction of flexion (see claim 5).

Claim Objections

7. The "said at least one spring" of claim 10 is taken to refer to the "at least one annular wave spring" established by claim 7.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-7, 10, 11, 8, 9, 12, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "photomultiplier tube assembly" in lines 4 and 5. There is insufficient antecedent basis for this limitation in the claim. Claim 1 has been deliberately amended to remove the antecedent basis for this language. See also claim 4 and claim 20.

Claim 11 recites the limitation "said at least one spring" in line 1. There is insufficient antecedent basis for this limitation in the claim. If "at least one spring" refers to any element

established or further limited by claim 7, the claim is redundant. If “at least one spring” refers to one of the plurality of elongated non-metallic springs established by claim 1, there would be multiple issues under 35 U.S.C. 112, first paragraph (as “elongated” and “annular” conflict and the specification does not describe a radially positioned wave spring and the like).

The balance of the claims is rejected on the basis of their dependence.

As stated in *In re Steele*, 305 F.2d 859, 134 USPQ 292 (CCPA 1962), a rejection under 35 USC 103 [now 35 USC 103(a)] should not be based on considerable speculation about the meaning of terms employed in a claim or assumptions that must be made as to the scope of the claims. See MPEP § 2173.06. Because the scope of claim 11 cannot be reliably ascertained, no further action on the merits will be made as to this claim.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 21 and 24 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Perna *et al.* (US004994673A).

With respect to independent claim 21, Perna *et al.* discloses a scintillation crystal package **10** (Fig. 1) comprising a housing **12**, a substantially cylindrical scintillation crystal **14** supported in the housing, and a plurality of ribs **86** (Figs. 4-7) extending along the crystal, radially between the crystal and the housing. Ribs **86** are elongated (column 6, lines 12-14), non-metallic (column 5, lines 24-26), and springs (column 5, lines 24 and 36-42).

With respect to dependent claim 24, the housing **12** in the package of Perna *et al.* is also cylindrical (column 3, lines 17-19) and at least one resilient member **40** is located at one end **18** of the crystal **14** axially between an end wall **24** of the housing **12** and the one end **18** of the crystal **14**.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 1-6, 8, 9, 13, 15, 16, 18, and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frederick *et al.* (US005962855A) in view of Nunes *et al.* (US003704877A).

With respect to independent claim 1, Frederick *et al.* discloses a radiation detector (Fig. 16) comprising a housing 230, 372, a substantially cylindrical scintillation crystal 614 and a photomultiplier tube 116 supported in the housing, and a plurality of elongated springs 418, 375 extending along the crystal and the photomultiplier tube, radially between the crystal and the photomultiplier tube and the housing. The material of the springs 418, 375 in the detector of Frederick *et al.* is a choice within the ordinary skill in the art (column 15, lines 61-62). Nunes *et al.* teaches (column 3, lines 4-5) that non-metallic materials are a known substitute for metallic materials in the manufacture of springs for damping. It would have been obvious to one of ordinary skill in

the art at the time the invention was made to modify the detector of Frederick *et al.* to specify that springs 418, 375 were non-metallic in view of the art recognized equivalence for the same purpose.

With respect to dependent claim 2, Nunes *et al.* identifies plastic material (column 3, line 4).

With respect to dependent claim 3, the springs 418, 375 in the detector of Frederick *et al.* are substantially flat (Fig. 13). Nunes *et al.* identifies ceramic material (column 3, line 4).

With respect to dependent claim 4, the springs 418, 375 in the detector of Frederick *et al.* extend axially along at least part of the crystal 614 and the photomultiplier tube 116.

With respect to dependent claim 5, the springs 418, 375 in the detector of Frederick *et al.* are under flexion in the direction recited.

With respect to dependent claim 6, the housing 230 in the detector of Frederick *et al.* is also cylindrical (Fig. 13) and at least one resilient member 408 is located at one end of the crystal 614, axially between an end wall 235 of the housing 230 and the one end of the crystal (Fig. 16, column 16, lines 23-24).

With respect to dependent claim 8, a photomultiplier tube of the recited shape is so well known as to require no citation. Because the suspension taught by Frederick *et al.* allows the use of a larger crystal, it would have been obvious to one of ordinary skill in the art at the time the invention was made to specify that photomultiplier tube 116 was of the recited shape such that faceplate 118 matched the diameter of scintillation crystal 614 without having the rest of the tube have the same bulk.

With respect to dependent claim 9, an electronics package 20 is coupled to the distal end of the photomultiplier tube in the detector of Frederick *et al.* (Fig. 2).

With respect to independent claim 13, Frederick *et al.* discloses a radiation detector (Fig. 16) comprising a housing 230, 372, a substantially cylindrical scintillation crystal 614 and a

photomultiplier tube **116** supported in the housing, a plurality of elongated springs **418, 375** circumferentially spaced about and extending along the crystal and the photomultiplier tube, radially between the crystal and the photomultiplier tube and the housing, and at least one resilient member **408** located at one end of the crystal **614**, axially between an end wall **235** of the housing **230** and the crystal (Fig. 16, column 16, lines 23-24). The material of the springs **418, 375** in the detector of Frederick *et al.* is a choice within the ordinary skill in the art (column 15, lines 61-62). Nunes *et al.* teaches (column 3, lines 4-5) that non-metallic materials are a known substitute for metallic materials in the manufacture of springs for damping. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detector of Frederick *et al.* to specify that springs **418, 375** were non-metallic in view of the art recognized equivalence for the same purpose. Nunes *et al.* specifically identifies plastic and ceramic (column 3, line 4).

With respect to dependent claim 15, a photomultiplier tube of the recited shape is so well known as to require no citation. Because the suspension taught by Frederick *et al.* allows the use of a larger crystal, it would have been obvious to one of ordinary skill in the art at the time the invention was made to specify that photomultiplier tube **116** was of the recited shape such that faceplate **118** matched the diameter of scintillation crystal **614** without having the rest of the tube have the same bulk.

With respect to dependent claim 16, an electronics package **20** is coupled to the distal end of the photomultiplier tube in the detector of Frederick *et al.* (Fig. 2).

With respect to dependent claim 18, the crystal in the detector of Frederick *et al.* is wrapped in a reflective material **40** (column 8, lines 14-26).

With respect to independent claim 20, Frederick *et al.* discloses a radiation detector (Fig. 16) comprising a housing **230, 372**, a substantially cylindrical crystal **614** and a photomultiplier tube **116**

supported in the housing, radial suspension means 418, 375 located radially between the crystal and the photomultiplier tube and the housing, and axial suspension means 408 located at one end of the crystal 614, axially between an end wall 235 of the housing 230 and the crystal (Fig. 16, column 16, lines 23-24). The material of the radial suspension means 418, 375 in the detector of Frederick *et al.* is a choice within the ordinary skill in the art (column 15, lines 61-62). Nunes *et al.* teaches (column 3, lines 4-5) that non-metallic materials are a known substitute for metallic materials in the manufacture of springs for damping. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detector of Frederick *et al.* to specify that radial suspension means 418, 375 were non-metallic in view of the art recognized equivalence for the same purpose. Nunes *et al.* specifically identifies ceramic (column 3, line 4).

With respect to independent claim 21, Frederick *et al.* discloses a scintillation crystal package (Fig. 16) comprising a housing 230, a substantially cylindrical scintillation crystal 614 supported in the housing, and a plurality of elongated springs 418 extending along the crystal, radially between the crystal and the housing. The material of the springs 418 in the detector of Frederick *et al.* is a choice within the ordinary skill in the art (column 15, lines 61-62). Nunes *et al.* teaches (column 3, lines 4-5) that non-metallic materials are a known substitute for metallic materials in the manufacture of springs for damping. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detector of Frederick *et al.* to specify that springs 418 were non-metallic in view of the art recognized equivalence for the same purpose.

With respect to dependent claim 22, Nunes *et al.* identifies plastic material (column 3, line 4).

With respect to dependent claim 23, the springs 418 in the package of Frederick *et al.* are substantially flat (Fig. 13). Nunes *et al.* identifies ceramic material (column 3, line 4).

With respect to dependent claim 24, the housing 230 in the package of Frederick *et al.* is also cylindrical (Fig. 13) and at least one resilient member 408 is located at one end of the crystal 614, axially between an end wall 235 of the housing 230 and the one end of the crystal (Fig. 16, column 16, lines 23-24).

15. Claims 7, 10, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frederick *et al.* (US005962855A) and Nunes *et al.* (US003704877A) as applied to claims 6 and 13 above, and further in view of Perna *et al.* (US004994673A).

With respect to dependent claim 7, Frederick *et al.* does not identify the type of spring used as resilient member 408. Perna *et al.* shows (Fig. 1, element 40) that an annular wave spring is known for this purpose. In view of the stiff support in the axial direction as provided by the annular wave spring of Perna *et al.* and as desired by Frederick *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detector suggested by Frederick *et al.* and Nunes *et al.* to specify that spring 408 was of the “annular wave” type. See also spring 408 in Fig. 2 of Frederick *et al.*

With respect to dependent claim 10, Perna *et al.* shows compression plates 24, 42 located on opposite axial sides of the annular wave spring 40. In view of the advantageous spread of the spring force as taught by Perna *et al.* (column 3, lines 51-56) which is advantageous in preserving the integrity of the scintillation crystal, it would have been obvious to one of ordinary skill in the art to modify the detector suggested by the combination of references to include compression plates. See also retainer 404 and pad 410 on opposite axial sides of spring 408 in Fig. 2 of Frederick *et al.*

With respect to dependent claim 14, Frederick *et al.* does not identify the type of spring used as resilient member 408. Perna *et al.* shows (Fig. 1, element 40) that an annular wave spring is known for this purpose. In view of the stiff support in the axial direction as provided by the annular wave

spring of Perna *et al.* and as desired by Frederick *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the detector suggested by Frederick *et al.* and Nunes *et al.* to specify that spring 408 was of the “annular wave” type. See also spring 408 in Fig. 2 of Frederick *et al.*

With respect to dependent claim 17, Perna *et al.* shows compression plate 42 located axially between the annular wave spring 40 and the crystal. In view of the advantageous spread of the spring force as taught by Perna *et al.* (column 3, lines 51-56) which is advantageous in preserving the integrity of the scintillation crystal, it would have been obvious to one of ordinary skill in the art to modify the detector suggested by the combination of references to include a compression plate. See also pad 410 on the side of spring 408 in Fig. 2 of Frederick *et al.*

16. Claims 12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frederick *et al.* (US005962855A) and Nunes *et al.* (US003704877A) as applied to claims 1 and 13 above, and further in view of Robinson *et al.* (US005120963A).

With respect to dependent claims 12 and 19, although the housing of the detector of Frederick *et al.* includes a substantially circular cap 235 joined face-to-face to the cylindrical shield portion 230 of the housing, Robinson *et al.* shows (Fig. 24) that a housing of a radiation detector includes a substantially cylindrical cap 164 telescopically joined at one end thereof to a cylindrical shield portion 176 of the housing. In view of the sturdy overlap where the sections of the housing are joined as shown by Robinson *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector suggested by Frederick *et al.* and Nunes *et al.* such that cap 235 was cylindrical and joined telescopically.

Response to Submission(s)

17. The amendment filed May 18, 2004 has been entered.

18. This application has been published as US2005/0224717A1 on October 13, 2005.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Omohundro *et al.* (US003087060A) shows (Fig. 1) a photomultiplier tube 1 of the shape recited in claims 8 and 15.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Constantine Hannaher whose telephone number is (571) 272-2437. The examiner can normally be reached on Monday-Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov/>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Constantine Hannaher
Primary Examiner